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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,615	03/25/2004	Masayuki Masuyama	67471-038	5010

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EXAMINER	
WANG, KENT F	

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/808,615	MASUYAMA ET AL.	
	Examiner	Art Unit	
	Kent Wang	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 19* is/are rejected.

7)☒ Claim(s) *2-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments, filed on 08/23/2007, have been entered and made of record. Claims 1-19 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1 and 19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakuragi (US 2001/0033337) in view of Kudo (US 6,784,931).

Regarding claim 1, Sakuragi discloses an imaging device (solid state imaging pickup device) that outputs brightness information (image signal) according to an amount of incident light, comprising:

- an imaging unit (an amplification-type MOS sensor) that includes a plurality of unit cells (sensor cell) arranged two-dimensionally, each unit cell (sensor cell) including a photoelectric conversion part (photodiode 1, Fig 3) that generates a first output voltage (output voltage in vertical signal line 15, Fig 3) in a reset state

(voltage is applied to the reset signal line and the photodiode is in a reset state) and a second output voltage (voltage in horizontal signal line 17, Fig 3) according to an amount of incident light (light incident onto the sensor), and each unit cell (sensor cell) generating a reset voltage (voltage at level H pulse 103, Fig 4) that corresponds to the first output voltage (output voltage in vertical signal line 15) and a read voltage (voltage at level H pulse 102, Fig 4) that corresponds to the second output voltage (voltage in horizontal signal line 17) ([0060]-[0061], [0065], and 0070]-[0071], Sakuragi); and

- an output unit (output amplifier 20, Fig 3) operable to output, in relation to each unit cell (sensor cell), brightness information (image signal) indicating a difference between the reset voltage (voltage pulse 103, Fig 4) and the read voltage (voltage at level H pulse 102, Fig 4) when normal light is incident to the imaging device (light incident onto the sensor) and the read voltage (voltage pulse 102, Fig 4) is in a predetermined range (reference voltage V_R) ([0065]-[0071], Sakuragi).

Sakuragi does not explicitly disclose an output unit operable to output a relative light-strength detecting scheme.

Kudo discloses the output brightness information indicating a difference between the reset voltage (a reset pulse signal ϕRST, Fig 4) and the read voltage (a read pulse signal ϕSEL, Fig 4) when normal light (a low brightness object) is incident to the imaging device (amount of light incident onto solid state imaging device 100, Fig 1) and the read voltage (a read pulse signal ϕSEL) is in a predetermined range (reference potential of the photodiode

101 Fig 2), and brightness information indicating high brightness when strong light (a high brightness object) is incident to the imaging device (solid state imaging device 100) and the read voltage (a read pulse signal ϕSEL) is not in the predetermined range (col. 6, line 66 to col. 7, line 61, Kudo).

Thus, it would have been obvious to one of ordinary skill in the art to have included the voltage output operation as taught by Kudo into Sakuragi's image pickup apparatus, as to make possible the advantages of providing an amplification type solid state imaging device capable of generating a relative light-strength detecting scheme and make it possible to take a preventive measure against shadow detail loss due to a voltage reset operation (col. 2, lines 30-34, Kudo).

Regarding claim 19, Sakuragi discloses an imaging method for use in an imaging device (solid state imaging pickup device) that includes an imaging area formed by a plurality of unit cells (sensor cell) arranged two-dimensionally and outputs brightness information (image signal) according to an amount of incident light (light incident onto the sensor), each unit cell (sensor cell) including a photoelectric conversion part (photodiode 1, Fig 3) that generates a first output voltage (output voltage in vertical signal line 15, Fig 3) in a reset state (voltage is applied to the reset signal line and the photodiode is in a reset state) and a second output voltage (voltage in horizontal signal line 17, Fig 3) according to an amount of incident light (light incident onto the sensor), and each unit cell (sensor cell) generating a reset voltage (voltage at level H pulse 103, Fig 4) corresponding to the first output voltage (output voltage in vertical signal line 15) and a read voltage (voltage at level H pulse 102, Fig 4) corresponding to the second output voltage (voltage in horizontal signal line 17), the method

comprising a judgment step (voltage is applied to clamp capacitor 13, Fig 3 and set the W/L ratio) of judging, in relation to each unit cell (sensor cell), whether the read voltage is in a predetermined range (reference voltage V_R) ([0066]-[0067];

Sakuragi does not explicitly disclose an output step of outputting brightness information indicating a difference between the reset voltage and the read voltage and high brightness.

Kudo discloses the method further comprising:

- a first output step of outputting brightness information (image signal, the potential in the column line 4, Figs 1-4) indicating a difference between the reset voltage (a reset pulse signal ϕRST, Fig 4) and the read voltage (a read pulse signal ϕSEL, Fig 4) when normal light (a low brightness object) is incident to the imaging device (amount of light incident onto solid state imaging device 100, Fig 1) and the read voltage (a read pulse signal ϕSEL) is judged to be in the predetermined range (reference potential of the photodiode 101 Fig 2) (col. 6, line 66 to col. 7, line 61, Kudo); and
- a second output step of outputting brightness information (image signal, the potential in the column line 4, Figs 1-4) indicating high brightness when strong light (a high brightness object) is incident to the imaging device (solid state imaging device 100) and the read voltage (a read pulse signal ϕSEL) is judged not to be in the predetermined range (col. 6, line 66 to col. 7, line 61, Kudo).

Thus, it would have been obvious to one of ordinary skill in the art to have included the voltage output steps as taught by Kudo into Sakuragi's image pickup method, as to make

possible the advantages of providing an amplification type solid state imaging device capable of generating a relative light-strength detecting scheme and make it possible to take a preventive measure against shadow detail loss due to a voltage reset operation (col. 2, lines 30-34, Kudo).

Allowable Subject Matter

5. Claims 2-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

   - Hamasaki et al. (US 5,793,423) disclose a solid state image sensing device in which an output circuit is so arranged as to have a low output impedance, thereby increasing a switching speed during the horizontal scanning.
   - Sakurai et al. (US 2003/0206234) disclose an image pickup apparatus including a pixel containing a photodiode which converts a photo-signal into a signal charge and accumulates the signal charge and an amplifier transistor which amplifies the signal charge accumulated in the photodiode, and a control element adapted to limit the output of the amplifier transistor so as to prevent the output from falling to below a predetermined voltage.
   - Egawa et al. (JP 2000-059691) disclose a solid state image pickup device which capable to reduce an image noise to be generated in the output display picture of an image sensor by suppressing a leak current after the end of series of noise removing operation in the case of reading for each horizontal line at the CMOS image sensor.
   - Sugiki et al. (JP 2000-287131) disclose a solid state image pickup device which is capable to prevent a picture from blackening due to the incidence of a very strong light without deteriorating the luminous sensitivity.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kent Wang whose telephone number is 571-270-1703. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-270-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KW
22 October 2007

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER